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ABSTRACT

The monograph presents with work of the Association for Persons with Severe Handicaps (TASH) regarding best practices for physical and occupational therapy and speech/communication services for individuals with severe disabilities. The document consists of a position paper, list of readings, survey results, and an article on training needs. The position statement emphasizes requirements of integration of services and facilitation of functioning in natural settings. Recommended readings include 65 journal articles and book chapters and 16 research reports relevant to integrated therapy; and 11 guidelines from professional organizations. A sample survey form is provided of a 1987 survey of training background and needs given to TASH related services personnel (N=82); the results are presented in 21 tables and focus on training components, types of programs, facilitators and barriers to best practices, needs assessment for training, and suggested training topics. An article on training needs of physical and occupational therapists discusses these needs in terms of four areas: (1) assumptions underlying service design; (2) knowledge and skills about educational models of service provision; (3) knowledge and skills related specifically to the disciplines of occupational and physical therapy; and (4) collaborative teamwork knowledge and skills. The article contains 75 references. An appendix provides a sample job description for physical/occupational therapists who provide services to students with severe disabilities. (DB)

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RELATED EDUCATIONAL SERVICES FOR INDIVIDUALS WITH SEVERE DISABILITIES

Report from the

RELATED SERVICES SUBCOMMITTEE

of the

TASH CRITICAL SERVICES COMMITTEE

May 1989

Edited by

Jennifer York and Beverly Rainforth

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TASH
The Association for Persons with Severe Handicaps
7010 Roosevelt Way, NE
Seattle, Washington 98115
(206) 523-8446

FOREWORD

This monograph was compiled by the Related Services Subcommittee of the Association for Persons with Severe Handicaps (TASH). The Subcommittee was established at the TASH Critical Issues Committee meeting in December, 1985, as a result of discussions about best practices for therapy services for individuals with severe disabilities. The Subcommittee membership includes physical therapists, occupational therapists, speech therapists, and parents, many of whom are also members of other national professional or parent organizations. Although the label "related services" technically includes many disciplines and supports required to assist children in their special education programs, the primary emphasis of Subcommittee efforts thus far have concerned physical therapy, occupational therapy, and to a lesser extent speech/communication services.

For the past three years, the four major activities of the Subcommittee have been (1) to develop and disseminate a Position Statement on the provision of related services to persons with severe disabilities, (2) to organize and promote a strand at the annual TASH conferences that focuses on issues specific to related services professionals, (3) to compile a resource list on recommended readings related to teamwork and integrated therapy, and (4) to write a paper on physical and occupational therapy training needs related to individuals with severe disabilities. This monograph was compiled in order to disseminate these products of the TASH Related Services Subcommittee. Thanks to all the Subcommittee members for their contributions of the past three years.

Signed,

Jennifer York

Jennifer York, Ph.D., PT
Chairperson
TASH Related Services Subcommittee

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TASH

RELATED SERVICES SUBCOMMITTEE

MEMBERS

1985-1989

Bob Atherton
208 Fairmont
Dekalb, Illinois 60115

Ruth Dennis
Center for Developmental Disabilities
University of Vermont
499c Waterman Building
Burlington, Vermont 05405

Susan Edelman
Center for Developmental Disabilities
University of Vermont
499c Waterman Building
Burlington, Vermont 05405

Susan Effgen
Hahnemann University
Mail Stop 502
Program in Physical Therapy
Broad and Vine
Philadelphia, Pennsylvania 19102

Dennis Finnigan
Education Resource Specialist
Galladet University, Kendall Green
800 Florida Avenue, NE
Washington, DC 20002

Mike Giangreco
Center for Developmental Disabilities
University of Vermont
499c Waterman Building
Burlington, Vermont 05405

Beverly Rainforth
Division of Education
State University of New York
Binghamton, New York 13901

Judy Schutzenhofer
Belleville Township H.S.E.
2555 West Boulevard
Belleville, Illinois 62221

Karen Spencer
Transition to Community Employment Project
Gibbons Building
Colorado State University
Fort Collins, Colorado 80523

Jennifer York (Chairperson)
University of Minnesota
104 Pattee Hall
150 Pillsbury Drive, SE
Minneapolis, Minnesota 55455

Pip Campbell has served in an advisory capacity to the Related Services Subcommittee.

TASH
7010 Roosevelt Way, NE
Seattle, WA 98115
(206) 523-8446

TASH

POSITION STATEMENT

ON THE PROVISION OF RELATED SERVICES

TO PERSONS WITH SEVERE HANDICAPS

TASH Board Approved,
November 1987

TASH
7010 Roosevelt Way, NE
Seattle, Washington 98115
(206) 523-8446

TASH

POSITION STATEMENT

ON THE PROVISION OF RELATED SERVICES

TO PERSONS WITH SEVERE HANDICAPS

The Association for Persons with Severe Handicaps (TASH) is an international organization whose primary purpose is to advocate for and support exemplary models of service delivery for persons with severe handicaps.

Many persons with severe handicaps have complex and challenging needs. The expertise of related services professionals, such as physical therapists, occupational therapists, and speech and language pathologists is frequently required.

TASH believes that related services personnel have expertise and can contribute in the process of integrating persons with severe handicaps into typical home community life. A high degree of collaboration and sharing of information and skills must occur among families, direct services providers, and related services personnel.

The provision of integrated services requires that related services personnel:

1) Establish priorities with parents/advocates and other team members;

2) Observe and assess persons with handicaps in natural settings;

3) Collaborate with family and team members to provide intervention strategies and adaptations that optimize participation in natural settings;

4) Teach specific and individualized procedures to enhance functional positioning, movement, and communication abilities in natural settings;

5) Evaluate the effectiveness of intervention procedures based on performance outcomes in natural settings.

APPROVED BY TASH BOARD, NOVEMBER 1986.

RECOMMENDED READINGS ON

TEAMS AND INTEGRATED THERAPY

FOR LEARNERS WITH SEVERE DISABILITIES

November 1988

Compiled by

Beverly Rainforth, Jennifer York, and Mike Giangreco

of the

Related Services Subcommittee of the
Critical Issues Committee

TASH
7010 Roosevelt Way, NE
Seattle, Washington 98115
(206) 523-8446

RECOMMENDED READINGS ON TEAMS AND INTEGRATED THERAPY

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Reference list compiled by:
Beverly Rainforth, PhD, PT
Jennifer York, PhD, PT
Michael Giangreco, PhD
The Critical Issues Subcommittee on Related Services,
The Association for Persons with Severe Handicaps
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RESEARCH RELEVANT TO THE EFFICACY OF AN INTEGRATED THERAPY MODEL

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RESULTS OF A SURVEY

OF TASH RELATED SERVICES PERSONNEL:

TRAINING BACKGROUNDS AND NEEDS

November 1987

Conducted and Compiled by

Jennifer York and Beverly Rainforth

of

The Related Services Subcommittee of
The Critical Issues Committee

TASH
7010 Roosevelt Way, NE
Seattle, Washington 98115
(206) 523-8446

TASH

SUPPORT SERVICES SURVEY

Summer 1987

TASH: THE ASSOCIATION FOR PERSONS WITH SEVERE HANDICAPS

SUPPORT SERVICES SURVEY

SUMMER, 1987

FOR THE PURPOSES OF THIS SURVEY, THE PHRASE INDIVIDUALS WITH SEVERE HANDICAPS REFERS TO:

Individuals with moderate to profound degrees of mental retardation who in addition may have physical, sensory, or medical difficulties; OR

Individuals who have such severe physical, sensory, medical, or other disabilities such that they are high risk for not achieving integration into home, school, community, and work environments.

SECTION I: DEMOGRAPHICS AND TRAINING

1) Your position is:

____ Physical therapist
____ Occupational therapist
____ Speech and language pathologist
____ Other.....specify: _____

2) Your degrees and years of completion are:

____ B.S. or B.A..... completed: _____
____ M.S. or M.Ed. or M.A.... completed: _____
____ Ph.D. or Ed.D..... completed: _____

3) You are employed as a support services provider:

____ Part-time..... hours/week: _____
____ Full-time

4) Estimate the percentages of time you work in:

____% Early childhood programs
____% Elementary programs
____% Middle or High School programs
____% Adult programs..... specify type: _____
____% Clinic settings
____% Other.....specify: _____

5) Estimate the percentages of time you work with:

____% Individuals with mild handicaps
____% Individuals with moderate handicaps
____% Individuals with severe handicaps

6) Consider all the training and information you have received related to individuals with severe handicaps. Estimate the percentage of training provided through each of the following methods:

____% Preservice coursework
____% Preservice practica/affiliations/internships
____% Inservice training by my employers
____% Inservice training by my coworkers
____% Continuing education courses or professional workshops
____% Graduate or other advanced coursework
____% Other.....specify: _____

7) Related to individuals with severe handicaps, what were the 3 most beneficial aspects or topics areas of your training?

---

8) Related to individuals with severe handicaps, what are the 3 types or topics areas you would like more information or training about?

---

9) Overall, how well do you think your training has prepared you to work with individuals who have: (circle one for each)

Mild Handicaps?.....not very well satisfactory very well

Moderate Handicaps?.not very well satisfactory very well

Severe Handicaps?...not very well satisfactory very well

****

SECTION II: CURRENT AND BEST PRACTICES FOR INDIVIDUALS WITH SEVERE HANDICAPS

Please score each item in Section II twice. Once to indicate current practice in the program you work in; and once to indicate whether you believe the item is an indicator of best practice. Circle your responses and use the following response codes:

CURRENT PRACTICE RESPONSES

A - Practiced for ALL individuals with severe handicaps
S - Practiced for SOME individuals with severe handicaps
N - Practiced for NO individuals with severe handicaps
? - I DON'T KNOW if this is practiced for individuals with severe handicaps

BEST PRACTICE RESPONSES

Y - YES, I believe is a best practice
N - NO, I do not believe this is a best practice

	CURRENT PRACTICE				BEST PRACTICE	
SUPPORT SERVICES PERSONNEL.....						
1) Provide services based on an articulated philosophy that is consistent across team members.	A	S	N	?	Y	N
2) Assess learners in natural settings.	A	S	N	?	Y	N
3) Prioritize IEP/IHP content with other team members.	A	S	N	?	Y	N
4) Write objectives that:						
- specify natural setting outcomes.	A	S	N	?	Y	N
- are functional.	A	S	N	?	Y	N
- specify learner behavior outcomes.	A	S	N	?	Y	N
- are measurable.	A	S	N	?	Y	N
5) Assist in developing and writing instructional programs by integrating support service/therapy methods.	A	S	N	?	Y	N
6) Develop and implement use of ongoing data collection methods to allow data-based decision making.	A	S	N	?	Y	N

	CURRENT PRACTICE	BEST PRACTICE
7) Deliver services in the context of functional activities.	A S N ?	Y N
8) Deliver:		
- Direct services to learner.	A S N ?	Y N
- Consultation and training to other team members.	A S N ?	Y N
- Follow-up and monitoring with other team members at least twice/month.	A S N ?	Y N
- Service in home environments.	A S N ?	Y N
- Service in community environments.	A S N ?	Y N
9) Work with parents/family/friends to increase learner participation in home and neighborhood activities.	A S N ?	Y N
10) Participate in regularly scheduled team meetings.	A S N ?	Y N

OF THE FOLLOWING FACTORS, CHECK THE 3 THAT HAVE BEEN THE GREATEST FACILITATORS OF BEST PRACTICES IN YOUR PROGRAM:

____ Preservice training
____ Inservice training
____ Support from your supervisor
____ Support from your coworkers
____ Work with an out of agency/district consultant
____ Written information (journals, newletters, books)
____ Your philosophy and work experience
____ Other, specify:

_____

CHECK THE 3 GREATEST BARRIERS TO IMPLEMENTATION OF BEST PRACTICES IN YOUR PROGRAM:

____ Inadequate support from supervisor
____ Inadequate support from team members or coworkers
____ Inadequate training available
____ Inadequate number of support services personnel
____ Inadequate written material available
____ Inadequate time
____ Other, specify:

_____

SECTION III: NEEDS ASSESSMENT

Related to individuals with severe handicaps, rate the impact you think each of the following items would have on improving support service delivery. Use the following scale:

RATING SCALE: 1 = Little or No Impact
2 = Moderate Impact
3 = A Great Impact= an immediate priority!

PRESERVICE TRAINING NEEDS

_____ Coursework on support service delivery and teamwork in public school and/or community settings
_____ Practicum/affiliations/internships in public school and/or community settings
_____ Training experiences with other disciplines

CONTINUING EDUCATION TOPIC AREAS

_____ Establishing priorities and working collaboratively with parents and other team members
_____ Observing and assessing persons with handicaps in natural settings
_____ Teaching other team members how to integrate support services expertise and methods into typical activities
_____ Evaluating the effectiveness of intervention procedures based on performance outcomes in natural settings
_____ Learning a variety of assessment and intervention approaches

DISSEMINATION AND COLLABORATION ACROSS DISCIPLINES

_____ Presenting at conferences
_____ Establishing joint committees/task forces between TASH and other professional organizations (e.g., APTA, AOTA, ASHA)
_____ Publishing in journals and newsletters

SYSTEMS CHANGE STRATEGIES

_____ Obtaining grant monies to develop model demonstrations of effective support service delivery for individuals with severe handicaps in natural environments
_____ Conducting applied research on effective models of support service delivery
_____ Establishing positions for support services professionals as consultants for state education and human service agencies

OTHER, PLEASE SPECIFY:

_____ _____

_____ _____

TxDOT

SUPPORT SERVICES SURVEY

RESULTS

Fall 1997

[illegible]

[illegible]

[illegible]

[illegible]

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]	0	0	0	0	0
[illegible]	0	0	0	0	0
[illegible]	0	0	0	0	0
[illegible]					
[illegible]	0	0	0	0	0
[illegible]	0	0	0	0	0
[illegible]	0	0	0	0	0

[illegible] RELATED SERVICES SURVEY: SUMMER 1987

[illegible] IN WHICH RESPONDENTS WORKED

(Reported in percentages)

	GP	OT	PT	PSY	SW
(# Respondents)	(22)	(17)	(10)	(10)	(11)
EARLY CHILDHOOD					
25% or more	36	35	50	11	0
50% or more	27	18	40	6	0
75% or more	23	12	10	0	0
ELEMENTARY					
25% or more	27	41	70	17	9
50% or more	14	18	20	6	0
75% or more	9	12	10	0	0
MIDDLE OR HIGH					
25% or more	18	24	50	22	18
50% or more	5	0	20	17	9
75% or more	5	0	10	6	9
ADULT					
25% or more	32	29	0	50	82
50% or more	32	29	0	39	73
75% or more	23	12	0	28	73
CLINIC					
25% or more	9	12	10	28	0
50% or more	9	6	0	22	0
75% or more	5	6	0	11	0
OTHER					
25% or more	14	12	0	11	18
50% or more	9	6	0	11	18
75% or more	5	0	0	11	9
1 PROGRAM	55	35	10	28	73
2 PROGRAMS	33	24	30	28	27
3 OR MORE PROGRAMS	33	41	60	44	0

TASH RELATED SERVICES SURVEY: SUMMER 1987

PROGRAMS IN WHICH RESPONDENTS WORKED
25% OR MORE TIME

(Reported in percentages)

(# Respondents)	SP (22)	OT (17)	PT (10)	PSY (18)	SW (11)
EARLY CHILDHOOD	36	35	50	11	0
ELEMENTARY	27	41	70	17	9
MIDDLE OR HIGH	18	24	50	22	18
ADULT	32	29	0	50	82
CLINIC	9	12	10	28	0
OTHER	14	12	0	11	18
1 PROGRAM	55	35	10	28	73
2 PROGRAMS	23	24	30	28	27
3 OR MORE PROGRAMS	23	41	60	44	0

TASH RELATED SERVICES SURVEY: SUMMER 1987

PROGRAMS IN WHICH RESPONDENTS WORKED
50% OR MORE TIME

(Reported in percentages)

	SP	OT	PT	PSY	SW
(# Respondents)	(22)	(17)	(10)	(18)	(11)
EARLY CHILDHOOD	27	18	40	6	0
ELEMENTARY	14	18	20	6	0
MIDDLE OR HIGH	5	0	20	17	9
ADULT	32	29	0	39	73
CLINIC	9	6	0	22	0
OTHER	9	6	0	11	18
1 PROGRAM	55	35	10	28	73
2 PROGRAMS	23	24	30	28	27
3 OR MORE PROGRAMS	23	41	60	44	0

TASH RELATED SERVICES SURVEY: SUMMER 1987

PROGRAMS IN WHICH RESPONDENTS WORKED
75% OR MORE TIME

(Reported in percentages)

(# Respondents)	SP (22)	OT (17)	PT (10)	PSY (18)	SW (11)
EARLY CHILDHOOD	23	12	10	0	0
ELEMENTARY	9	12	10	0	0
MIDDLE OR HIGH '	5	0	10	6	9
ADULT	23	12	0	28	73
CLINIC	5	6	0	11	0
OTHER	5	0	0	11	9
1 PROGRAM	55	35	10	28	73
2 PROGRAMS	23	24	30	28	27
3 OR MORE PROGRAMS	23	41	60	44	0

TASH RELATED SERVICES SURVEY: SUMMER 1987

PREPARATION TO WORK WITH PEOPLE WHO HAVE DISABILITIES

(Reported in percentages)

(#)	SP (20)	OT (18)	PT (10)	SP OT PT (48)	PSY (19)	SW (11)	ALL (77)
MILD							
Not very well	5	11	10	8	16	0	10
Satisfactory	30	33	60	38	21	36	39
Very well	65	56	30	54	63	64	67
MODERATE							
Not very well	10	17	10	13	14	0	13
Satisfactory	35	50	40	42	32	27	43
Very well	55	33	50	46	53	73	60
SEVERE							
Not very well	36	50	20	38	37	9	39
Satisfactory	32	39	20	32	11	55	35
Very well	32	11	60	30	53	36	42

(Reported in Average Ratings)

(#)	SP (20)	OT (18)	PT (10)	SP OT PT (48)	PSY (19)	SW (11)	ALL (67)
MILD	2.60	2.20	1.10	2.46	2.47	1.53	2.90
MODERATE	2.45	1.95	1.20	2.33	2.37	1.58	2.79
SEVERE	1.95	1.32	1.10	1.92	2.16	1.32	2.35

Not very well = "1"
Satisfactory = "2"
Very Well = "3"

TASH RELATED SERVICES SURVEY: SUMMER 1987

TRAINING RELATED TO PEOPLE WITH SEVERE DISABILITIES

(Reported in percentages)

(# Respondents)	SP (21)	OT (18)	PT (10)	PSY (19)	SW (11)
PRESERVICE-COURSEWORK					
25% or more	0	6	0	0	0
50% or more	0	0	0	0	0
PRESERVICE-PRACTICA					
25% or more	10	17	0	26	18
50% or more	5	0	0	16	9
INSERVICE-EMPLOYERS					
25% or more	10	17	0	5	36
50% or more	0	0	0	0	18
INSERVICE-COWORKERS					
25% or more	19	22	10	21	27
50% or more	14	0	0	11	0
CONTINUING EDUCATION/ WORKSHOPS					
25% or more	33	61	60	42	45
50% or more	19	33	50	11	36
GRADUATE/ ADVANCED COURSEWORK					
25% or more	24	11	30	21	18
50% or more	19	0	30	11	18
OTHER *					
25% or more	10	28	10	47	27
50% or more	10	6	10	16	18

* Almost all OTHER responses were related to reading professional materials and publications or experience in the field. A few respondents indicated that parenting a child with disabilities was a major type of training.

TASH RELATED SERVICES SURVEY: SUMMER 1987

TRAINING RELATED TO PEOPLE WITH SEVERE DISABILITIES: 25% OR MORE OF ALL TRAINING

(Reported in percentages)

(# Respondents)	SP (21)	OT (18)	PT (10)	PSY (19)	SW (11)
PRESERVICE-COURSEWORK	0	6	0	0	0
PRESERVICE-PRACTICA	10	17	0	26	18
INSERVICE-EMPLOYERS	10	17	0	5	36
INSERVICE-COWORKERS	19	22	10	21	27
CONTINUING EDUCATION/ WORKSHOPS	33	61	60	42	45
GRADUATE/ ADVANCED COURSEWORK	24	11	30	21	18
OTHER *	10	28	10	47	27

* Almost all OTHER responses were related to reading professional materials and publications or experience in the field. A few respondents indicated that parenting a child with disabilities was a major type of training.

TASH RELATED SERVICES SURVEY: SUMMER 1987

TRAINING RELATED TO PEOPLE WITH SEVERE DISABILITIES
50% OR MORE OF ALL TRAINING

(Reported in percentages)

	SP	OT	PT	PSY	SW
(# Respondents)	(21)	(18)	(10)	(19)	(11)
PRESERVICE-COURSEWORK	0	0	0	0	0
PRESERVICE-PRACTICA	5	0	0	16	9
INSERVICE-EMPLOYERS	0	0	0	0	18
INSERVICE-COWORKERS	14	0	0	11	0
CONTINUING EDUCATION/ WORKSHOPS	19	33	50	11	36
GRADUATE/ ADVANCED COURSEWORK	19	0	30	11	18
OTHER *	10	6	10	16	18

* Almost all OTHER responses were related to reading professional materials and publications or experience in the field. A few respondents indicated that parenting a child with disabilities was a major type of training.

TASH RELATED SERVICES SURVEY: SUMMER 1987

FACILITATORS OF BEST PRACTICE*

(Reported in percentages)

	SP	OT	PT	SP OT PT	PSY	SW	ALL
(N)	(23)	(17)	(10)	(50)	(17)	(11)	(77)
PRESERVICE TRAINING	0	12	0	4	6	0	4
INSERVICE TRAINING	52	53	30	48	47	50	48
SUPPORT OF SUPERVISOR	48	29	30	38	24	70	39
SUPPORT OF COWORKERS	48	59	70	56	76	50	60
WORK WITH CONSULTANT	22	12	20	18	12	10	16
WRITTEN INFORMATION	39	29	60	40	53	40	43
YOUR PHILOSOPHY AND EXPERIENCE	65	71	90	72	82	80	75
OTHER	There were no duplications of written in responses. Responses were: cost efficiency, transdisciplinary model, multidisciplinary model, MRAC training, interaction with professionals on a national basis, and being a mother of a child with severe disabilities.						

* Respondents were asked to "X" the three greatest facilitators.

TASH RELATED SERVICES SURVEY: SUMMER 1987

BARRIERS TO BEST PRACTICE*

(Reported in percentages)

	SP	ST	PT	SP ST PT	PSY	BW	ALL
(N)	(23)	(17)	(9)	(49)	(17)	(10)	(76)
INADEQUATE..							
SUPERVISOR SUPPORT	13	29	44	24	24	30	25
COWORKER/ TEAM MEMBER SUPPORT	52	47	78	55	24	30	50
TRAINING AVAILABLE	52	29	33	41	29	30	37
NUMBER OF SUPPORT STAFF	52	47	56	51	35	70	50
WRITTEN MATERIAL	9	18	0	10	29	10	14
TIME	65	53	67	61	71	60	63
OTHER	Written in responses mentioned by 3 to 8 respondents were: budget (8), turnover (3), lack of support from external/community agencies (4), medical model training (3), and quality training of direct care staff (3). Other responses were: conflict with administrators, transportation, number of direct care staff, caseloads, equipment/materials, burnout, people who don't care, feeling that the community is not ready, and lack of seating specialists.						

* Respondents were asked to "X" the three greatest barriers.

[illegible] RELATED SERVICES SURVEY: SUMMER 1987

CURRENT AND BEST PRACTICES FOR
PROGRAMS SERVING PEOPLE WITH SEVERE DISABILITIES

Current Practices (CP) = reported in rating averages.
Best Practices (BP) = reported as "Yes" response percentages.

Leverage 8 of respondents		BP (22)	CP (16)	PS (19)	BP/CP/PS (48)
SUPPORT SERVICES PERSONNEL...					
Provide services based on an articulated philosophy that is consistent across team members.	CP	3.91	3.38	3.00	3.29
	BP	77	94	84	81
Possess learners in natural settings.	CP	3.36	3.13	3.10	3.23
	BP	82	94	100	90
Prioritize IEP/IHP content with other team members.	CP	3.82	3.94	3.89	3.31
	BP	95	76	90	84
Write objectives that specify:					
- natural settings.	CP	3.82	3.56	3.10	3.17
	BP	78	94	90	86
- functional behaviors.	CP	3.82	3.44	3.40	3.54
	BP	95	94	100	94
- learner behaviors.	CP	3.50	3.50	3.40	3.51
	BP	87	94	100	92
- are measurable.	CP	3.64	3.88	3.90	3.43
	BP	91	88	100	92
Assist in developing and writing instructional programs by integrating support service/therapy methods.	CP	3.50	3.19	3.00	3.34
	BP	91	94	100	94

[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]					
[illegible]					
Develop and implement use of ongoing data collection methods to allow data-based decision making	CP SP	0.91 91	0.19 98	0.89 89	0.20 91
Deliver services which [illegible]	CP SP	0.70 78	0.08 82	0.83 100	0.86 87
Deliver:					
- Direct services to learner.	CP SP	0.59 68	0.01 81	0.10 80	0.20 77
- Consultation and training to other team members.	CP SP	0.80 79	0.80 93	0.90 94	0.89 90
- Following and monitoring with other team members at least twice/month.	CP SP	0.10 78	0.10 73	0.80 84	0.11 77
- Service to home.	CP SP	0.83 84	0.07 88	0.87 87	0.79 81
- Service to the community.	CP SP	0.81 87	0.08 81	0.73 83	0.80 86
Work with parents/family/ friends to increase learner participation in home and neighborhood activities.	CP SP	0.83 82	0.10 100	0.88 90	0.89 89
Participate in regularly scheduled team meetings.	CP SP	0.90 94	0.05 88	0.93 94	0.79 89

[illegible]
- Practiced for [illegible] people with severe disabilities.
- Practiced for [illegible] people with severe disabilities.
- Practiced for [illegible] people with severe disabilities.

[illegible]

[illegible]

[illegible]

Current Practices (CP) = reported (1) nothing, small agency.
Best Practices (BP) = reported as "Best" responses per participants.

[illegible]	Topic	Qty	No.
(percentage % of respondents)	(CP)	(CP)	(CP)
[illegible]			
Provide services based on an individualized philosophy that no caseworker serves more members.	CP BP	5.00 88	5.70 70	5.24 67
Assess treatment in natural settings.	CP BP	5.20 84	5.00 70	5.21 88
Participate CSP/ISP planning and other case members.	CP BP	5.40 100	5.00 89	5.21 89
Bring objectives that specify:				
= natural settings.	CP BP	5.20 79	5.70 70	5.10 80
= functional behaviors.	CP BP	5.20 80	5.50 70	5.11 88
= learner behaviors.	CP BP	5.00 88	5.20 78	5.18 93
= are measurable.	CP BP	5.00 80	5.00 89	5.00 83
Assist (1) developing and writing [illegible] objectives by integrating supports, services/therapies activities.	CP BP	5.00 80	5.20 88	5.10 83

[illegible]

[illegible] SERVICES SURVEY: SUMMER [illegible]

NEEDS ASSESSMENT

(Reported in rating averages)

[illegible]	SP (23)	ST (18)	PT (10)	SP ST PT (50)	PST (17)	SN (11)	ALL (79)
PRESERVICE							
Coursework on Teaching	2.09	2.17	2.00	2.10	1.71	1.91	1.99
Practicum in Schools, Community	2.43	2.50	2.40	2.45	2.00	2.36	2.42
Training with other Disciplines	2.43	2.44	2.00	2.33	2.29	1.90	2.20
[illegible] EXPERIENCE							
Practice with Team Members	2.61	2.76	2.60	2.66	1.24	2.09	2.27
Observe and Assess in Natural Settings	2.26	2.64	2.50	2.64	2.35	2.45	2.27
Teach other Team Members	2.69	2.70	2.60	2.68	2.29	2.36	2.55
Evaluate Intervention Effectiveness	2.50	2.47	2.30	2.45	2.47	2.36	2.44
Learn a Variety of Assessment & Intervention Approaches	2.27	2.35	2.50	2.27	1.94	2.24	2.24

COLLABORATE ACROSS STATE LINES/ NATIONAL ASSOCIATIONS							
Present at Conferences	1.87	1.89	1.90	1.88	1.76	1.82	1.85
Joint Committees, Task Forces	2.05	2.28	1.80	2.08	1.65	1.73	1.94
Publish in Journals, Newsletters	2.04	2.17	1.80	2.03	1.76	1.91	1.96
SYSTEMS CHANGE							
Demonstration Grants	2.35	2.08	2.20	2.23	2.24	2.18	2.22
Applied Research	2.35	2.19	2.10	2.25	2.24	2.00	2.21
State Agency Positions	2.35	2.11	2.40	2.27	2.06	1.90	2.18
OTHER	There were no duplications of written in responses. Responses were: national public relations campaign for community education and integration for people with severe handicaps, systems change will require attention to people with mild and moderate disabilities also, recruit quality professionals (increase salaries and visibility of successes), state and federal funding of augmentative systems, administrators should learn about normalization (PASS), organizations like this TASH subcommittee to get support services personnel together to share experiences and to validate our services to people with severe disabilities, and advocacy training about integration and community resources.						

Little or no impact = "1"
Moderate impact = "2"
Great impact, immediate priority = "3"

TASH RELATED SERVICES SURVEY: SUMMER 1987

MOST BENEFICIAL TRAINING TOPICS

(Reported in percentages of all responses*)

	SP	OT	PT	SP OT PT	PSY	SW	ALL
(# People)	(21)	(18)	(9)	(48)	(17)	(11)	(76)
(# Responses)	(52)	(45)	(23)	(120)	(34)	(25)	(179)
OT/PT**	21	47	39	34	6	0	24
CURRICULUM	24	22	26	18	26	28	21
BEHAVIOR	2	2	4	6	32	20	13
TEAMWORK	2	11	13	8	15	8	9
AUGM COMM	31	2	0	14	9	8	12
NORMAL DEV***	21	4	4	12	12	0	10
COMP/TECH	2	7	0	3	0	4	3
ADULTS****	0	0	0	0	0	0	0
ADAPTATIONS	0	7	17	6	3	4	5
HAND COMB	0	4	0	2	0	8	2
FAMILY/PARENT	2	0	4	0	0	4	2
OTHER	Basic sciences, sensory stimulation, social skills, medication, medical issues, infants, sex education, social psychology, neuropsychology, research, legal issues, myofascial release, data collection, sensory handicaps.						

* Respondents were asked to list three topics.
** OT/PT response category includes NDT, Positioning/Handling, equipment, orthopedics, casting, and splinting.
*** NORMAL DEV response category includes normal language, cognitive, and sensory-motor development.
**** ADULT response category includes specific reference to transition services, adult vocational, and residential.

TASH RELATED SERVICES SURVEY: SUMMER 1987

AREAS IN NEED OF TRAINING

(Reported in percentages of all responses*)

	SP	OT	PT	SP OT PT	PSY	SW	ALL
(# People)	(22)	(16)	(9)	(47)	(17)	(8)	(72)
(# Responses)	(58)	(40)	(20)	(118)	(38)	(20)	(176)
OT/PT**	18	25	30	17	0	0	11
CURRICULUM	17	33	25	24	5	15	19
BEHAVIOR	5	10	10	8	26	20	13
TEAMWORK	14	15	15	14	26	5	16
AUGM COMM	24	3	5	14	11	5	12
NORMAL DEV***	2	3	0	2	3	0	2
COMP/TECH	7	10	5	8	5	5	7
ADULTS****	0	18	10	8	8	35	10
ADAPTATIONS	0	10	10	5	3	0	3
HAND COND	3	0	0	2	8	10	3
FAMILY/PARENT	7	0	0	3	0	0	2
OTHER	Basic sciences, sensory stimulation, social skills, medication, infants, administrators, funding, medical issues, sex education, research, sexory, legal issues, data collection, motivational issues, sensory handicaps.						

* Respondents were asked to list three topics.
** OT/PT response category includes NDT, Positioning/Handling, equipment, orthopedics, casting, and splinting.
*** NORMAL DEV response category includes normal language, cognitive, and sensory-motor development.
**** ADULT response category includes specific reference to transition services, adult vocational, and residential.

TRAINING NEEDS OF PHYSICAL AND OCCUPATIONAL THERAPISTS WHO WORK IN EDUCATIONAL SETTINGS WITH LEARNERS WHO HAVE SEVERE DISABILITIES

April 1989

Jennifer York, Ph.D., PT
University of Minnesota
Institute on Community Integration

Beverly Rainforth, Ph.D., PT
State University of New York-Binghamton
School of General Studies and Professional Education

Winnie Dunn, Ph.D., OTR
University of Kansas - Medical Center
Program on Occupational Therapy

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People with severe disabilities are becoming more integrated in regular home and community life. Large residential facilities close as more typical, family size living options develop in neighborhoods. More families of children with severe disabilities and complex health care needs receive the support necessary to care for their children at home. In some school districts, children with even the most severe disabilities attend their local schools and age appropriate classes with typical peers from their neighborhoods. Supported employment efforts continue to expand and many individuals with severe disabilities work in integrated community settings alongside co-workers without disabilities. As these integrated life outcomes are sought and realized, physical and occupational therapists have a greater opportunity than ever before to effect the degree of participation by people with disabilities in their homes, at school, in the community, and at work. Capitalizing on the expertise of therapists to facilitate integrated life outcomes, however, requires a substantial modification of traditional service provision models. As the locations where people with disabilities live, work, and play change, so too must the locations in which therapists provide service. Flexible approaches to service provision are required if therapists are to work in real world environments with individuals who have severe disabilities, and with their families and friends who can provide ongoing support in typical environments. Such a change in service provision presents a significant challenge to therapists, therapist educators, public schools, human service agencies, and professional organizations. Can personnel preparation programs expand their already intensive curriculum to include yet another area of specialization? How do public school and human service agencies support existing therapists and other team members during the change to a more integrated model of service provision? Can continuing education networks and local therapy associations collaborate to offer courses related to persons with severe disabilities?

The professions of physical and occupational therapy were established in response to rehabilitation and habilitation needs of persons with both acute and chronic disabilities. These professions are grounded in the pursuit of improved functional sensorimotor abilities which enable individuals to learn, work, play, communicate, socialize, and perform daily living activities. Therapy services originated in medical models and settings. A major assumption underlying therapy intervention, therefore, has been that improved performance in clinical settings (e.g., therapy areas) will result in improved functioning in daily life outside the clinical setting. For many individuals with severe disabilities, this is a dangerous and frequently unvalidated assumption. Adaptive functioning at home, school, work, and in the community depends largely upon the demands, opportunities, and characteristics of the individual's specific natural daily environments and activities. For example, use of a wheelchair may be very efficient in a home that has firm wall to wall carpeting, large open spaces, wide doorways, and institutional size bathrooms. In a home with narrow door frames, multiple levels, throw rugs, and furniture that packs the rooms, use of a wheelchair may be nearly impossible. Alternative mobility methods such as cruising along the furniture, kneewalking, scooting along the floor, or even being physically assisted to walk may prove much more efficient (Wiemann & York, in preparation; York, in press).

It is difficult to determine appropriate intervention strategies aimed at improving motoric functioning without having knowledge of the demands and opportunities which exist in the daily, real world environments that are encountered by the individual with disabilities. Working with students in a separate room, or even in a corner of a classroom does not

allow the therapist to make an accurate determination of needs or current functioning abilities. It is equally difficult to determine acceptable performance criteria unless competencies are environmentally referenced. For example, in an interview session with adults who have severe physical disabilities, an author of this chapter was informed that it was peers with disabilities and not therapists who were the most helpful in identifying adaptive strategies for using restrooms, carrying personal belongings, and storing a wheelchair in a car during transport. In addition, one of the adults reported learning transfers in the "world's largest bathroom" located at a clinic. There were grab bars at every possible height and location and enough space to turn the wheelchair 360 degrees on either side of the toilet. Not surprisingly, this individual found that none of the transfer strategies learned in the clinic were useful in any bathroom at home or in the community. Similarly, results of a survey of physical therapists who work in clinical settings indicated a lack of uniform or environmentally-referenced criteria for classifying patients as "functional community ambulators" (Lerner-Frankiel, Vargas, Brown, Krussell, & Schoneberger, 1986). The increasing pressure for accountability and for validating outcomes of interventions makes it more important than ever that educational team members, including physical and occupational therapists, carefully reference and validate performance objectives to demands and outcomes in natural environments.

The goal of therapy interventions always has been to improve function; however, as numerous philosophical and programmatic changes in educational service provision systems have occurred, there has been a corresponding need to change the framework for recommending, designing, and implementing therapy interventions. First, expected life outcomes for persons with disabilities have changed. Individuals with severe disabilities and their families expect a life growing up in a regular community with supports provided in regular, daily environments. Second, a more holistic and environmentally-referenced view of individuals has replaced a disability, dysfunctional focus. That is, educational teams are beginning to identify integrated school and community environments in which students can learn to participate. Then teams assume a problem solving stance to decide how to enhance functioning in each of the identified integrated environments. This is in direct contrast to old curricular models of focusing on skill deficits and setting criteria that must be met before inclusion in regular home, school, community, and work life. To a greater extent, instruction is being provided in regular education and community environments. Third, there has been a shift beyond mere physical integration in regular schools to an emphasis on including students with severe disabilities in all aspects of regular school life and on facilitating relationships among students with disabilities and their classmates without disabilities. Regular education students and teachers are becoming more involved in the lives of children and youth with severe disabilities. Fourth, the movement toward greater decentralization of programs, (i.e., students attending the home/neighborhood schools they would attend if not labeled handicapped), is requiring far more teamwork to support personnel in local schools to meet the varied and complex needs of students who have severe and multiple disabilities. Professionals who have worked in collaborative teaming models and realized their benefits are among the strongest advocates for collaborative teaming and integrated therapy. Many therapists have seen the results of their efforts multiply when they work more closely with family members, teachers, and others on the educational team. Finally, more is known about learning characteristics of persons with severe disabilities. One of the most important findings is that skill generalization (transfer of

training) cannot be assumed from one context to another context. Maintenance and generalization of skills rarely occurs if not required in daily functioning. This makes it critical that educational teams identify skills required in natural, daily environments for present and future functional skill development. In sum, there has been a shift to more integrated service provision as professionals and parents have observed the positive effects of integrated life outcomes, interpersonal relationships with peers who do not have disabilities, effective collaborative teaming models, and knowledge of learning facilitators. The momentum is continuing to grow in support of more inclusive life in the community for people with severe disabilities.

The purpose of this chapter is to identify critical areas of knowledge and skill development for physical and occupational therapists who work with school aged individuals who have severe disabilities. Strategies for addressing these needs will be discussed also. The majority of the content relates specifically to physical and occupational therapy services provided to school age children and youth with severe disabilities in educational environments.

CRITICAL AREAS OF KNOWLEDGE AND SKILL DEVELOPMENT

In order for therapists to work successfully in educational environments with students who have severe disabilities, several areas of specialized knowledge and skill development are necessary. Although some of the concepts described here may be introduced in preservice experiences, preservice training programs must prepare therapists to treat all age groups and a wide range of physical and psychological conditions. It is most likely that the majority of the specialized areas of knowledge and skill development will be addressed in post graduate learning experiences.

In a recent survey of physical and occupational therapists who are members of The Association for Persons with Severe Handicaps (York & Rainforth, 1989), therapists identified Neurodevelopmental Treatment (including positioning and handling), educational curricula, teamwork, and adaptive equipment as the most valuable areas of previous training related to persons with severe disabilities. Interestingly, they identified educational curricular areas (especially vocational), behavior analysis (including data collection), adaptations (including orthotics, computers and related technology, and instructional adaptations), and teamwork as priority areas in which additional training would be beneficial. Therapists also indicated that continuing education courses and workshops were the primary means by which they had developed competencies related to working with students who have severe disabilities. The TASH Therapist Survey indicates that therapists recognize the specialized skills and many pragmatic needs that are necessary to work successfully in school programs but do not seem to be receiving this information in preservice experiences.

The training needs for physical and occupational therapists who provide services to school aged individuals with severe disabilities can be organized into four areas of knowledge and skill development: (1) assumptions underlying service design for people with severe disabilities, (2) knowledge and skills about educational models of service provision for people with severe disabilities, (3) knowledge and skills related specifically to the disciplines of occupational and physical therapy, and (4) collaborative teamwork knowledge and skills. Each training need is discussed below. Table 1 provides a summary of specific competency areas and resources.

Table 1:
Physical and Occupational Therapy in Education Settings for Students with Severe Disabilities: Competency Areas and Resources

COMPETENCY AREA	RESOURCES
State, Federal and Special Education Laws (PL 94-142, PL 99-457); and Guidelines for Physical and Occupational Therapy in Educational Settings	American Physical Therapy Association (in preparation); American Occupational Therapy Association (1987; 1989); The Association for Persons with Severe Handicaps (TASH).
Educational Best Practices for Students with Severe Disabilities	
• Curriculum and Instruction	Falvey (1986); Ford, Schnorr, Meyer, Davern, Black, & Dempsey (1989); Snell (1987); Wilcox & Bellamy (1987).
• Measurement/Research (specific to physical and occupational therapy practice)	Ottenbacher (1986).
• Integration	Gaylord-Ross (1989); Stainback, Stainback, & Forest (1989).
• Collaborative Teamwork and Integrated Therapy	Campbell (1987); Dunn (in press); Giangreco (1989); Orelove & Sobsey (1987); Rainforth & York (in preparation).
Physical and Occupational Therapy Expertise	
• Normal and Abnormal Development of Movement	Bly (1984).
• Therapeutic Interventions	Campbell (1984); Connelly & Montgomery (1987); Finnie (1975); Jaeger (1987); Levitt (1986).
• Mobility	Trefler (1984).
• Positioning (including positioning equipment)	Bergen & Colangelo (1982); Ward (1982).
• Hand Use	Erhardt (1982).
• Adaptations (not including positioning equipment	Webster, Cook, Tompkins, & Vanderheiden (1985); York & Rainforth (1987).
• Orthopedics	Frazer, Hensinger, & Phelps (1980).
• Oral Motor	Morris (1987).
• Sensory Integration	Ayres (1980).

Assumptions Underlying Service Design for People with Severe Disabilities

When working with individuals who have severe disabilities, there are at least five assumptions that serve as the basis for integrated service design and intervention. These include (a) a "people first" orientation, (b) recognition of similarity of needs, (c) the value of interdependence, (d) a shared vision of participation in ordinary environments with extraordinary supports, and (e) learning and performance characteristics of learners with severe disabilities.

"People first" orientation. A people first orientation emphasizes that *each individual who happens to have a disability is first and foremost, a person* (Perske & Perske, 1988). Further, each is an individual person with unique interests, assets, and difficulties. In service design and implementation this orientation transcends all written and verbal communication. If it is necessary to label an individual at all, the label follows the noun. For example, John is a "student with a disability" instead of a "disabled student." Best of all would be "John is a fourth grader." Adopting people first language can be particularly difficult for health professionals who have experienced and been required to use, in both spoken and written communications, a multitude of diagnostic labels. To refer to an individual as "a CP," a "quad," or some other label, however, accentuates differences promotes a focus on dysfunction, and defines an entire person in terms of one characteristic. Many times labels even fail to describe accurately the deviant characteristic being accentuated. For example, how many children with the label of "spastic quadriplegic cerebral palsy" are exactly alike? In most instances, further description of abilities is required to communicate clearly the individual's abilities, assets, and functional difficulties.

Similarity of needs. A second underlying assumption for integrated programming is that *people with disabilities have similar needs as people without disabilities*. The Minnesota Governor's Planning Council on Developmental Disabilities (1987) provides a holistic perspective which emphasizes similarity of needs among all people:

> We have learned that services are most successful when basic needs are met in the context of addressing special needs. People with developmental disabilities, like all people, need:
>
> * To be seen, first of all, as people.
> * To experience love and friendship.
> * To experience continuity in their lives, especially in relation to people who are important to them.
> * To be respected and treated with dignity.
> * To have access to opportunities and information, to make choices and to exercise their rights.
> * To learn those skills which are needed to participate, as much as possible, as valued members of their community.
> * To have a decent place to live.
> * To have meaningful employment and contribute to the community.
> * To have opportunities to continue to learn throughout their lives. (p. 4).

By viewing a person with a disability as sharing many of the same life needs as people who do not have identified disabilities, there is a common ground for working together. Therapists offer valuable knowledge of sensorimotor functioning and interventions to assist persons with severe disabilities in meeting their identified priority needs. Physical and occupational therapists design interventions to address sensorimotor strengths and difficulties to facilitate accomplishment of priority life goals determined by the individuals, their friends and family, and others who care about them. Occupational therapists also contribute to cognitive and psychosocial components of performance. It is in the context of addressing priority needs and accomplishing priority life goals that the need for therapy expertise is identified and integrated.

Interdependence. A third underlying assumption relates to *interdependence*. In today's society, independence is the lauded aspiration of many people. Independence, however, is a misnomer. Very few, if any, individuals are truly independent, or would be happy in such a state of isolation. "It is a mistake to have INDEPENDENCE as a goal, because we cannot exist without others. We thrive in INTERDEPENDENCE. This is community. It is not a goal to strive for. It is a gift to receive from everyone we meet." (Lynch, 1989, p. 1). Independence was once the ultimate qualifier for each objective on an individualized educational plan. Emphasis on independence, however, combined with the inability for many individuals with severe disabilities to achieve independence across life functioning areas resulted in exclusion from a variety of natural environments. For example, if a high school student with severe disabilities was judged incapable of independent shopping, frequently a decision was made to exclude her from shopping at all. Instead, a curriculum of readiness and prerequisites were the focus of instruction. A change in this orientation based on the belief that individuals with severe disabilities can and should be present and involved in typical home, school, and community environments to the greatest degree possible, even if independence is not a reasonable goal, has been referred to in the past decade as the *Principle of Partial Participation* (Baumgart et al., 1982). By adapting this principle, educational team members assumed a problem solving approach for participation in integrated school and community. This opened many doors that previously had remained shut and locked on many individuals with severe disabilities.

More recently, the concept of *interdependence* has expanded the concept of *partial participation*. Interdependence serves to emphasize the positive and normalized aspects of requiring assistance in certain aspects of our daily lives. Independence as a goal of intervention, therefore, should be considered carefully given the specific environmental demands and supports of each student. Some people with the most severe sensori-motor difficulties cannot achieve physical independence in daily activities. Others could be independent in some aspects of sensori-motor functioning but the amount of energy required to do so results in a diminished capacity to perform in other areas. For example, one elementary school student could independently wheel her wheelchair to the playground for recess. By the time she reached the playground, however, recess was half over and she was exhausted. In this situation, independent mobility resulted in isolation from peers. For each individual, the educational team makes decisions about when independent motoric functioning is important and when interdependence is more appropriate. In many situations these are difficult determinations to make. Only the individual and those who know him or her best, can make the most appropriate decisions.

Ordinary environments... extraordinary supports. The fourth underlying assumption of service design ties together the previous three. This is the assumption of *ordinary environments... extraordinary supports*. This asserts that people with disabilities can and should participate in typical home, school, community, and work environments but recognizes that doing so may require individualized support. This principle is the basis for a new design of services. Previously, the predominant models of service provision were centralized services in which students with severe disabilities were assigned to special environments (e.g., institutions, special schools, special education classroom, therapy room) in which professionals with specialized areas of expertise provided services. Institutions, large group homes, day activity centers, sheltered workshops, handicapped-only schools, and even special education classes are results of centralized, clustered service design. The challenge now is to mobilize specialized supports, e.g., physical and occupational therapists, from centralized locations to decentralized, more integrated environments in which students with severe disabilities are learning alongside peers without disabilities in regular school and community environments. As therapists modify their assessment and intervention practices to be carried out in a wide array of natural environments, they can be sure that their expertise will be most useful to the students with whom they work.

Learning characteristics. The final underlying assumption of service design is based on the expanded knowledge of learning and performance characteristics of individuals with severe intellectual disabilities. When compared to individuals who are not so labeled, people with severe intellectual disabilities tend to require a greater number of instructional trials to acquire new skills, learn fewer skills, have greater difficulty with skill maintenance and generalization, and learn less complex skills (Brown, Nietupski, Ford, Sweet, Shiraga, York, Loomis, 1983; Zarella Albright, Brown, VanDeventer, & Jorgensen, 1987). These characteristics make it critically important for therapists to prioritize in collaboration with other members of educational teams for students with severe disabilities. Teams always identify more skills in need of instruction than can be taught in the number of hours available. Therefore, the highest priority skills for instruction, are those that occur naturally and provide cues and consequences so that functional performance can be established and maintained. The highest priorities for instruction, therefore, are those skills that allow the learner to participate in integrated settings, and those skills whose use will be encouraged by the people and activities that occur naturally in those environments.

Educationally Related Models of Service Provision

In order for physical and occupational therapists to function effectively within educational environments, a basic understanding of an educational model of service provision is required. This includes knowledge of state and federal laws governing practice in educational settings, educational as opposed to a medical orientation to services, considered best educational practices for students with severe handicaps, and models of therapy service provision.

Laws governing therapy in educational settings. Public Law 94-142, the Education for All Handicapped Children Act (EHA) of 1975, requires the provision of "related services," including physical and occupational therapy services, as "required to assist a handicapped child benefit from special education." The implication is that therapists are included as

educational team members so they can contribute expertise that results in improved educational performance by children labeled as handicapped. Even though numerous effort promote an integrated approach to the provision of physical and occupational therapy services have existed for over ten years, there remains considerable difficulty in designing and adopting models of integrated and educationally related services. Members were provided with little direction or support guiding implementation. In the past few years, however, both the American Occupational Therapy Association (1987) and the American Physical Therapy Association (1991, in preparation) have undertaken initiatives to provide specific guidelines for therapy practice in educational settings. In both of these documents, there is an emphasis on addressing educationally relevant skills, the need for therapists to work collaboratively as members of educational teams, the need to develop a better understanding of the role of therapists in educational settings, and the need for educational personnel, administrators, parents, and other team members to understand how to use related services. Therapists in educational settings must relate interventions relevant to educational performance and promote a better understanding of their role in educational settings.

The EHA amendments of 1986, Public Law 99-457, modify the requirements of Public Law 94-142. Children from birth through 2 years of age may receive physical and/or occupational therapy as a primary service, while children ages 3 to 5 may receive physical and/or occupational therapy as a related educational service. Infants, toddlers, and their families do not have to otherwise qualify as educationally handicapped to receive public education supported physical and occupational therapy services and may receive these services alone or in conjunction with other needed services. These revisions related to physical and occupational therapy services for infants and toddlers are currently the focus of many interagency efforts at local, state, and national levels. The practical implications of therapy as primary service for infants and toddlers paid for by education monies will require continuing efforts to develop, demonstrate, and disseminate effective models of service provision. The American Occupational Therapy Association (1989) has provided guidelines for early intervention and preschool services to assist in these efforts (Dunn, Campbell, Deller, Hall, & Berger).

Medical versus educational models of service provision. An important area of understanding for physical and occupational therapists in educational settings lies in the distinction between educational and medical models of service provision. Most therapists have been trained predominantly in medical models of service provision. Adapting to an educational model, especially when the differences are not delineated and described, can be a difficult transition at best and an impossible one at worst. A physical therapist told one of the authors about two frustrating years with a special education teacher: "I think she's a good teacher, but she doesn't think I support her. I would be happy to do whatever it is she wants, if only I could figure out what it is!" Educational and medical service orientations differ in several ways (Oberteuffer, 1960). Medical models focus on identifying and remediating underlying causes of dysfunction. Current educational models are based on a more behavioral approach in which interventions are directed at changing behaviors which are observable and measurable. Another difference is that medical interventions are frequently short term. Educational interventions are longitudinal because the nature of the disabilities is long term. Finally, medical interventions sometimes focus on isolated body

skills in functions because dysfunction exists in only certain parts of the body. Most school-aged children with severe disabilities with whom therapists work have difficulties in more than one part of the body and more than one area of functioning. There is one area that should be common ground in both medical and educational models. This common ground exists in outcomes.

Best educational practices. Best educational practices for students with severe disabilities promote inclusion in regular school and community life. In collaboration with numerous school districts, the Center for Developmental Disabilities at the University of Vermont (1997) published Best Practice Guidelines for Students with Intensive Educational Needs. These guidelines reflect the work and best practices promoted by many researchers, practitioners, and families throughout the country also. The hallmarks of best educational practice include: (1) age-appropriate placement in local public schools, (2) integrated delivery of educational and related services, (3) social integration with age-appropriate peers, (4) transition planning, (5) community-based training, (6) functional curricula orientation in current and future environments, (7) systematic data-based instruction, (8) home-school partnership, and (9) systematic review of educational and related services.

It is important to note that the involvement of physical and occupational therapists is not limited to narrowly defined areas of service provision but is essential for each of the best educational practices. Given that most school districts have not fully implemented best educational practices, therapists can be involved along with other school personnel in efforts to adopt these practices and to modify existing service provision models for implementation. Administrative leadership and collaborative teamwork among regular educators, special educators, related service personnel, and families will be required for successful implementation (Thousand, Nevin-Villa, & Fox, 1997). Physical and occupational therapists can make important contributions related to successful implementation of best practices for students with the most severe disabilities.

Models of service provision. The processes by which physical and occupational therapists affect student change include both direct and indirect services. Direct therapy refers to direct hands-on interactions between the therapist and the student during which the therapist analyzes student interactions with the environment and uses specific therapeutic techniques to develop or improve particular movement, sensory, or perceptual skills. Direct therapy services can be provided in a variety of settings, including the classroom, the playground, the physical education class, the home, the school bus, community environments, and other places where the student functions during the school day. When the therapist provides direct services, he or she must also provide ongoing consultation to teachers and other team members so that effective intervention strategies can be incorporated into activities throughout the school day.

Indirect therapy refers to teaching, consulting with and directly supporting other team members (including paraprofessionals) in the process of integrating therapeutic interventions into daily activities. The IDEA (1997) uses the term monitoring to describe the array of service provision options. Specifically, monitoring occurs when the therapist creates an individualized plan for a student but relies someone in the natural environment to

carry out the plan on a regular basis. The therapist maintains regular contact with those who carry out the programs and shares responsibility for student outcomes. The therapist also interacts directly with the student on a regular basis in order to appropriately monitor and modify intervention procedures. Many states and the AOTA (1987) require that there are at least two contacts per month with the responsible therapist.

The type of therapy services provided is related to the larger issue of criteria for therapy services of any kind. Eligibility criteria have been suggested in an effort to identify students in need of therapy services, as well as the type and intensity of services. In some situations, need for therapy and potential to benefit from therapy have been equated, resulting in some students with severe disabilities receiving no or very limited therapist involvement in educational programming. PL 94-142 provides for a "free appropriate public education" for all children, and thereby supports the policy that no child is too handicapped to benefit from educational services. In contrast, medical service systems dictate that therapists discontinue patients who do not make "satisfactory" progress. This policy confusion, compounded by therapist shortages, administrative and financial pressures, and widely differing therapist expertise may lead to break down in teamwork leaving teachers to work alone. Students with severe multiple disabilities present significant challenges, and no one individual or discipline has adequate expertise and creativity to solve the problems alone. Collaborative teamwork is essential. Physical and occupational therapists have essential roles in educational teams for children with the most severe disabilities. They may find, however, that they have to advocate for team membership with these individuals and their families.

The service provision model chosen depends on student needs, the educational goals of the student, and the expertise of the staff. Dunn and Campbell (in press) present a model in which therapists recommend to the team how they might be involved in educational programming given the degree to which sensori-motor dysfunction interferes with specific educational activities. The three steps in this model are (1) the team identifies general educational priorities for the student (e.g., leisure, activities of daily living, work), (2) therapists assess students to determine sensori-motor strengths and difficulties, (3) therapists present the degree to which sensori-motor dysfunction appears to be interfering with educational performance, (4) therapists suggest interventions (e.g., adapt materials, adapt posture/movement, teach and supervise others), and (5) team decides whether and how to integrate therapy interventions.

Finally, in making the decision as to the type of intervention that might be most appropriate for an individual student, therapists consider the least restrictive, i.e., most integrated, approach first (Giangreco, York, & Rainforth, in press). As much as possible, service decisions should be made that keep the student involved in the regular daily school routines with his or her peers. If therapy expertise can be successfully integrated into regular school activities, the student should not be removed from the classroom. The team, which includes parents, decides the most appropriate type and intensity of service for each student with those recommendations changing over time as student needs change. It is important to remember that direct services are not automatically preferred over or considered better than other service provision models. Similarly, indirect service does not

have to mean less service or less intensive service. One model is not better than the other, they are simply different.

Physical and Occupational Therapist Areas of Expertise

Working in educational settings is a new area of practice for many physical and occupational therapists. Further, students with severe disabilities are only a small percentage of children served by therapists in educational settings. Specific therapy competencies for working with these children relate to the pediatrics area of specialization. In general, the roles of physical and occupational therapists working in educational settings can be identified as follows: (1) participating in the team process for identifying educational priorities, designing instructional interventions (including integration of therapy methods), solving problems, and supporting other team members; (2) contributing therapy information and skills (e.g., hands-on interventions, equipment) that facilitate student success in educational programs. This includes training other team members to implement positioning and handling procedures and use of adaptive equipment; (3) addressing sensorimotor needs in naturally occurring educational contexts; and (4) collaborating with team to develop strategies for students with severe disabilities to be integrated into all aspects of regular school life, including regular classes and extracurricular activities.

Although there may be many differences between individual physical and occupational therapists, there are many areas in which the expertise of physical and occupational therapists overlaps. Both occupational therapists and physical therapists have expertise in the areas of sensorimotor development, gross motor skill development, positioning, and certain types of adaptive equipment (e.g., wheelchairs). Physical therapists generally have additional expertise in use of ambulation, modalities, and cardiorespiratory functioning. Occupational therapists generally have additional expertise in fine motor and perceptual skills, sensory integration, cognitive, psychosocial aspects of performance and adaptive devices related to daily activities. The expertise of a specific therapist will vary depending on his or her training, work experiences, and continuing education. Because of varied experiences and the fact that therapists in different school systems assume varying roles given their individual interests and the needs in their local circumstances, no attempt is made here to draw distinct lines of discipline boundaries. Some individuals with severe disabilities require physical therapy, or occupational therapy, or both. Appendix B contains a sample job description for physical and occupational therapists who work with students with severe disabilities in educational settings.

Functional sensori-motor components of daily activities. In an effort to promote a functional orientation for integrating physical and occupational therapy expertise in daily activities and natural environments for individuals with severe disabilities, the following model has been promoted (York & Rainforth, 1989; York, Rainforth, & Wiemann, 1988). For each daily activity, there are three major components for which therapists can contribute information on ways to improve learner performance. The first component is a mobility component which refers to how the individual travels to the designated environment and activity. Related to the mobility component, therapists determine the mobility methods (e.g., scooting, kneewalking, assisted walking, motorized scooter) most appropriate for the individual's motoric capabilities and environmental demands. The second component is a

positioning component, which refers to how the learner's body is positioned to allow efficient access to and involvement in the activity. Therapists have extensive expertise related to efficient methods for assuming, maintaining, and changing positions to promote task efficiency. Sitting, lying, and upright weightbearing positions are but a few of the options. A wide variety of equipment options are available to assist students maintain well aligned and stable postures that facilitate functional participation. Also related to positioning, therapists consider times during the day when alternatives to sitting can be employed in age appropriate and functional ways (e.g., lying down to watch television at home or kneeling at the kitchen table to make cookies). Many students spend most, if not all, of their school day in a seated position. Although sitting is particularly problematic, prolonged use of any position promotes the development of contractures and deformities, decubitus ulcers, respiratory difficulties due to immobility, and digestive dysfunction. Positions should be varied and balanced across the day. The third component is sensori-motor competence for participation component in which specific body parts (e.g., hands, eyes, mouth) are used to participate in the activity. Therapists can determine ways in which body parts can move most efficiently to enable participation in the activity. They may design hands-on interventions and environmental adaptations which allow greater participation also. By conducting a functional sensori-motor analysis of a student's day, therapists can identify numerous opportunities throughout the day in which therapeutic interventions could be integrated providing a greater number of opportunities to develop more efficient motor competencies.

Merging developmental and environmental orientations. Many of the approaches to assessment and intervention used by therapists for individuals with severe disabilities are grounded in theories of normal development. Developmental constructs, however, must not serve as the only basis of intervention design. Rigid adherence to a developmental approach severely limits the range of potentially constructive interventions. It fails to account for an individual's history of adaptive sensori-motor functioning. It focuses on skill deficits instead of on abilities and adaptive functioning. In addition, adaptive equipment that might replace the need for specific sensori-motor skills is not referenced in developmental constructs (e.g., wheelchairs, splints, microswitches). While patterns and sequences of normal sensorimotor development have been researched extensively and provide a rich source of information about efficient movement for individuals who do not have sensori-motor dysfunction, there has been much less study of abnormal patterns and sequences of motor development. Further, there is a very limited empirical basis for either supporting or refuting popular therapy intervention approaches. This is not meant to imply that clinicians have not been successful in their interventions, only that an empirical basis is lacking. Clearly more study is needed. Preliminary investigations support combining therapeutic and systematic instruction methodologies (Campbell, McInerney, Cooper, 1984; Giangreco, 1986).

Developmental, adaptive, and environmentally-referenced orientations to intervention can be integrated. This is accomplished when therapists determine intervention needs based on an environmental analysis by observing children function in different daily environments and by talking with family members and others involved with the individual in home, school, and community environments. This is referred to as an ecological approach (Brown, Branston-McLean, Baumgart, Vincent, Falvey, & Schroeder, 1979; Falvey, 1986). Physical and occupational therapists have an important role in this inventory process. Therapists identify mobility, positioning, and other sensori-motor demands encountered in daily environments.

In Table 2, an example of how therapists can analyze needs and possibilities in daily activities is provided. The specific activity analysis occurred in a regular education kindergarten class during free time. Once environmentally-referenced analyses occurs, physical and occupational therapists assist in designing appropriate interventions given their knowledge of ways to facilitate more efficient participation derived from their knowledge of both developmental references and adaptive resources. An environmental analysis, therefore, serves to identify and validate important targets of intervention or what to teach. A developmental and adaptive functioning analysis assists in determining how instruction might be designed. For example, an environmental analysis might indicate that a student has difficulty walking to lunch alongside classmates who do not have disabilities. Using knowledge of efficient movement (developmentally referenced) while also considering potential adaptations, (e.g., a wheeled mobility device), therapists make recommendations to the team about how the student could be taught to more efficiently travel to lunch. Providing physical assistance (hands-on therapeutic interventions) designed to facilitate improved gait might be deemed appropriate for short distance mobility within the classroom, while using a wheelchair might be deemed most appropriate for longer transitions, such as going out to lunch or out to recess.

Specific Discipline Competencies. If physical and occupational therapists are to function effectively in educational settings, they first must have competence within their own disciplines (Hutchinson, 1978). Competency areas specific to the fields of physical and occupational therapy compiled from several sources (American Occupational Therapy Association, 1987; American Physical Therapy Association, in preparation; Madison Metropolitan School District, 1984) include: (1) general sensori-motor functioning relating to muscle strength, muscle tone, interfering patterns of movement (reflexes), joint movement, coordination, balance, endurance, motor planning and reception and use of sensory information; (2) efficient assumption and maintenance of positions for daily activities; (3) daily living skills (e.g., eating, dressing), involving functional use of arm, leg, and trunk movement, functional oral movement for eating, and use of utensils and other adaptive equipment, (4) hand use involving reach, grasp, manipulation, release, visual motor skills, hand-eye coordination, and cooperative use of hands; (5) mobility skills involving use of varied mobility methods (e.g., scooting, kneewalking, walking, using a wheelchair), use of mobility equipment, body transfers, traversing varied terrains and levels; (6) respiratory function related to patterns of breathing, effective coughing and postural drainage, and activity tolerance; (7) development and use of perceptual, psychosocial, and cognitive skill components; and (8) design and use of adaptive equipment including orthotics, prosthetics, and instructional devices designed to improve functioning in daily routines. (Resources related to each of these topical areas are summarized in Table 1.)

Collaborative Teamwork

Paramount to the success of physical and occupational therapists working in educational settings is their ability to collaborate with other team members. A transdisciplinary model of teamwork has been promoted in this regard. In promoting a transdisciplinary model of teamwork, Dorothy Hutchinson (1978) defined this intensive team model as "committing oneself to teaching, learning, and working together with other providers of services across traditional disciplinary boundaries" (p. 68). Given the many varied and intensive needs of individuals with severe disabilities and the increasing number

Table 2

Sample Ecological Inventory for Determining Acceptable Mobility, Positioning, and Participation Demands in Daily Activities

ENVIRONMENT: KINDERGARTEN ROOM
PERIOD: FREE PLAY

ACTIVITIES OF PEERS WITHOUT DISABILITIES	TYPICAL METHODS AND ACCEPTABLE ALTERNATIVES		
	TRANSITIONS/MOBILITY	POSITIONS	PARTICIPATION/ADAPTATIONS
LOOKING AT/ READING BOOKS	TYP: walk to shelves. ALT: scoot, crawl, roll. Not much space but small equipment ok.	TYP: sit on carpeted steps, sit or lie on floor. Children are physically very close, usually touching. ALT: avoid use of equipment that isolates.	TYP: manipulate books with hands, read/comment out loud. ALT: most would be ok. Book holders, sticks to turn pages, taped books.
TALKING WITH FRIENDS	TYP: walk, run to carpeted steps, room corners. Small groups may change location to exclude peers or increase privacy. ALT: floor method ok, small equipment ok.	TYP: same as above. Positions may change to exclude peers or be more private. ALT: avoid use of equipment that isolates, may need to work in position changes.	TYP: talk, whisper, giggle, point, watch others, interrupt, leave if not included. ALT: show pictures, activate prerecorded taped messages.
SHOWING TOYS TO FRIENDS	TYP: walk, skip to cubbies then return to play area. ALT: floor method ok, scooter board difficult on surface change, wheelchair ok, friend could get toy.	TYP: stand or sit on floor or steps, usually very close to each other and touching. ALT: most upright positions ok.	TYP: hold, show, exchange, manipulate items. ALT: point to items, have friend help show item.
CLIMBING ON CARPETED STAIRS/SEATS	TYP: walk, skip to steps. ALT: any method ok, small equipment ok.	TYP: stand to step, sit to scoot up/down. ALT: could lie to roll down deep steps.	TYP: stepping in standing position, scooting seated. ALT: rolling down deep steps.

TYP: indicates typical methods displayed by peers without disabilities.
ALT: indicates alternatives that may be acceptable.

Reprinted with permission from: York, J., & Rainforth, B. (1989). Enhancing recreation/leisure participation by individuals with severe intellectual and physical disabilities. In L. H. Meyer, S. J. Schleien, & B. Biel (Eds.), Lifetime leisure skills and lifestyles for persons with developmental disabilities. Baltimore: Paul H. Brookes.

of natural environments in which these individuals are participating on a daily basis, a collaborative team approach is essential. In some school districts, the use of the term transdisciplinary has been inaccurately used to imply that agencies do not need to hire multiple professionals. That is, one person with continuing educational training in specific areas could be considered the "transdisciplinary team." This is inaccurate, inappropriate, and illegal. Effective transdisciplinary teamwork requires ongoing collaboration among professionals of different disciplines.

It is interesting to note that the transdisciplinary model of service provision has its origins in nursing related to practice in neonatal intensive care nurseries where there was the need to restrict the number of people who interacted with the infants. In a recently published chapter on the roles of physical therapists in neonatal intensive care nurseries, the need for intensive collaboration and sharing of information and skills across discipline boundaries was emphasized once again (Fiterman, 1987):

> Because baby's optimal time for intervention might occur when the therapist is not available, it is essential to train both parents and nursing staff in specific intervention techniques, as well as the principles of therapeutic intervention. Some therapists think that they alone are capable of providing these services. The most successful treatment strategies are those that are integrated into the total lifestyle of the baby and carried out throughout the waking hours (p. 31).

While a transdisciplinary approach to services to infants in the neonatal intensive care unit may be critical, it is also a logical model to adopt when working with older children, youth, and adults. Therapists cannot be present on a regular basis in all natural environments that are relevant to each individual with severe handicaps. Further, upon graduation from public school, individuals with severe disabilities frequently lose access to physical and occupational therapists making it particularly important to integrate effective interventions into a whole lifestyle routine so that maintenance of efficient movement in adulthood can be achieved.

Exchanging information and skills among team members. Adopting a transdisciplinary stance is difficult for many team members. Few teachers and therapists acquired experience in intensive, collaborative teamwork during their preservice training (Rainforth, 1985). Although therapists may excel at designing and implementing therapeutic interventions with individual students, they may be less skilled at transferring skills to other team members. The success of collaborative teamwork depends to a large extent upon the exchange of information and skills among team members. This has been referred to as *role release* (Lyon & Lyon, 1980), but might be better considered *role expansion* as accountability is not relinquished. In this process, all team members are teachers and learners. When exchanging information and skills among team members, supportive strategies for learning should be employed: (1) be supportive and approachable, (2) communicate clearly, (3) use an experiential learning approach, and (4) reinforce successive approximations. These practices prompt motivation and cooperation from fellow team members who serve as implementors of instructional programs that integrate methods from numerous disciplines. This is essential if intervention methods are to be applied

appropriately and consistently throughout the learner's school day. As collaborators with other team members, therapists must learn to effectively communicate the handling procedures and movement outcomes expected, as well as the rationale for the procedures. Therapists are skilled at implementing handling procedures themselves, but may initially experience some frustration when learning to share these skills with other team members. Many therapists have found the following process effective: (1) write the procedures, (2) demonstrate the procedures, (3) have the primary instructor read the procedures as the therapist provides a rationale for and demonstrates each step, (4) allow the instructor to demonstrate the procedure, initially on the therapist and then on the learner, (5) provide instructive feedback emphasizing key points, (6) review the written procedures out loud, (7) ask if there are any questions and if the instructor would like more opportunities for supervised practice, and (8) establish a plan for the instructor to contact the therapist when questions arise. Just as team members carefully design and individualize instruction for students, so too one new learning experiences designed for adult team members.

Shared decision-making and problem-solving. Perhaps the greatest difficulty for individual members on educational teams is to commit to team decision-making, particularly for determining priorities in the educational program. When functioning in relative isolation from one another, decisions are made from a single discipline perspective. In a team approach, relative priorities are discussed. The team may determine that the recommendations from one discipline have lower priority than those from other disciplines. The focus is on what are the greatest student needs overall. Some team members have difficulty relinquishing decisions to the team. Given the large number of potential instructional targets, however, a team decision is the best safeguard for assuring attention to the highest priorities for an individual child. Further, it is only through a team process, that the benefits of group problem-solving can be realized. Benefits include (a) greater interest in the problem stimulated by group membership, (b) a summative effort of individual contributions, (c) the capacity to recognize and reject poorly conceived solutions, and (d) the availability of greater information (Kruger, 1988). The support of team members and improved student outcomes that can be achieved through a collaborative team approach, surpass the importance of independence and control associated with more individualistic approaches.

Scheduling time in natural environments. One final competency that facilitates efficient functioning in educational settings relates to scheduling therapy time. Scheduling strategies that allow therapists to work with individual learners in multiple environments is essential for an integrated and collaborative team approach to service provision. This calls for changes in traditional approaches to scheduling. Two strategies that can be considered are use of *block scheduling* and a *primary therapist model*. In describing these strategies it must be noted and emphasized that they were designed in an effort to better meet the needs of children not as an administrative ploy to reduce the number of therapists needed or to cut costs. Appropriate use of these strategies must be considered carefully at the local level.

Traditionally, therapists schedule individual students for half hour to hour long periods of time, two or three times a week, at times that remain consistent throughout the school year. This rigid and short time period scheduling does not allow the flexibility required of an integrated and environmentally referenced approach to service provision. Instead, a *block*

scheduling approach can be used (Rainforth & York, 1987; York, Rainforth & Wiemann, 1988). Block scheduling designates longer periods of time, such as two to six hours of a school day, to work with numerous of learners. In school systems where five to eight students with developmental disabilities are assigned to one classroom, a therapist could allocate half or full days on a weekly or bi-weekly basis to each class. For example, a therapist with a case load of 30 students with severe disabilities assigned to five classrooms, might have the following schedule:

Monday	Tuesday	Wednesday	Thursday	Friday
Class 1	Class 2	Class 3	Class 4	Class 5

When children with severe disabilities are included in regular education classes and other decentralized locations, the special education classroom is designated on paper, (i.e., a given special education teacher is assigned five to eight students), but the actual instructional locations are regular education and community environments. The specific time allocations and places targeted for block scheduling vary depending on the number of learners to be seen, the complexity of learner needs, and the environments in which instruction is provided.

Another strategy that can assist with the logistics of integrated therapy is referred to as a *primary therapist model*. In these situations, physical and occupational therapist teams decide to assign either the physical or occupational therapist as the primary therapist for individual learners. This strategy has been used in an effort to minimize overlap and inefficiency between therapist roles and to increase flexibility by increasing the amount of time available to individual learners. In situations where both a physical and an occupational therapist provide services to the same students, caseloads can be effectively reduced by half. This allows longer time blocks, enables work in a greater number of environments, and reduces the number of child teams in which intensive, regular involvement is required by both a physical therapist and occupational therapist. Successful implementation, however, requires regular collaboration between the physical and occupational therapists and depends on individual therapists' areas of expertise. In a primary therapist model, physical and occupational therapists continue to conduct assessments, design interventions, and problem solve difficult situations together. Between therapist consultation can be accomplished by scheduling one block a week together.

When block scheduling, the days of the week designated to each class can rotate on a weekly basis to allow work with learners in environments that are used only on certain days. Half-day blocks also may be preferable when there are fewer students in the class, when their needs are less intense, or when more frequent service is desirable. When students need ongoing direct individual therapy it can be scheduled easily at the beginning and end of the school days. Alternatively, some therapists prefer to designate specific full days for direct therapy (e.g., Tuesdays and Thursdays) and other days for blocked therapy time in home, school, or community environments.

Block scheduling is most successful when expectations are clear about the regular days and times that a therapist will work with individual learners and respective team members, when communication opportunities among team members are ongoing and scheduled, and when a tracking system is used to ensure that all learners receive appropriate therapist support. The following procedures can be used to maximize appropriate implementation of a block scheduling strategy:

1. For each classroom (or designated group of students), the therapist develops a master list of learners with designated priority areas for therapy input and support. Include mobility, positioning, other movement needs, equipment, etc.

2. On the day designated to a specific classroom, the therapist meets for twenty minutes before school with the teacher. Using the list of learners and respective therapy needs, discuss priorities for the day. Develop a plan for the day resulting in a delineation of learners, environments, and priorities. (See Table 3).

3. The therapist keeps a record of strategies developed and pertinent points of discussion shared during the day. Disseminate copies of these notes to other team members, including paraprofessionals. Refer to these notes at the morning meeting on the next designated blocked day.

An essential component of an integrated model for therapy services is time to communicate with other team members. Much of this communication occurs on the block scheduled therapy days and in the actual educational activities with the learner and primary instructor. (The primary instructor is the person responsible for implementing instructional programs.) Additional time for meeting as a team must be scheduled also. These times should be designated at the beginning of the school year and should remain consistent throughout the year. For example, team members associated with a specific classroom may meet every other Thursday afternoon from 3:00 - 4:00 p.m. Teams evolving toward an integrated model have found that initially they need to meet on a relatively frequent basis. Over time, however, as strategies for working together on IEP development, and sharing information and skills becomes more efficient, much less time is required. This is no different than change experienced in any new situation.

STRATEGIES FOR ADDRESSING CRITICAL AREAS OF KNOWLEDGE AND SKILL ACQUISITION

Preservice preparation programs in occupational and physical therapy address training related to individuals of all ages and conditions resulting in little or no opportunity to specialize in one specific area of interest (Effgen, 1988). Given the extreme diversity of practice in the field of physical therapy, physical therapists can graduate from entry-level programs without experience in pediatrics or public school settings (Effgen, 1988). In addition, very few therapists and educators have the opportunity to collaborate during preservice training (Rainforth, 1985). Approximately one third of occupational therapists take jobs in pediatrics. Public school therapists is the second most frequently held job of occupational therapists (American Occupational Therapy Association, 1985). There continues to be, however, a varying amount of attention to pediatric content in preservice programs (AOTA Pediatric Task Force, 1989). The

Table 3
Example of a Blocked Therapy Schedule for a Physical Therapist in a High School Program

Time	Location	Instructor	Student and priority activities for therapist
8:30-9:00	School: entryway, hallway	Nancy (Teacher)	Lisa - Descending bus stairs Managing doorways Andy - Wheeling to locker Opening/closing locker Taking off/hanging up coat Jon - Locating locker Balancing during coat removal
9:00-1:00	Domestic site: Lisa's home	George (Assistant)	Lisa - Exiting in/out of car Walking up/down gravel sidewalk Walking up/down front steps Managing doorways Vacuuming Obtaining/returning food items and utensils in cupboards Lea - Indicating meal and leisure choices Brainstorming ideas for leisure, cooking, and housekeeping adaptations/participation Andy - Maneuvering wheelchair through doorways and over carpet Positioning for cleaning and cooking activities Adaptations for managing cleaning materials and utensils
1:00-2:00	Vocational site: public library	Ann (Vocational Teacher)	Lea - Using eyes to indicate direction Reaching arm to greet librarian Controlling arm movement to use pointer-entering adaptation Using stamp adaptation to sign out library books/magazines
2:00-3:00	School: physical education class	Nancy George (Teacher, Assistant)	All students Determining dressing priorities Instruction Developing exercise routines to music Assessing showering strategies
3:00-4:00	Team meeting: Nancy's class		

Note. This schedule delineates priorities for the therapist's blocked time with one class. The schedule is developed jointly by the classroom teacher and the therapist. The specific locations, instructors, learners, and priority activities are likely to change each time. Note that the monthly team meeting for the classroom is on the same day as this therapist's visit, reducing the need for transition between schools on one day.

Reprinted with permission from: Rainforth, B., & York, J. (1987). Integrating related services in community instruction. Journal of the Association for Persons with Severe Handicaps, 12(3), 190-198.

diversity in these therapy fields may eventually lead to specialized areas of concentration at a preservice level similar to the way in which both regular and special education training programs have diversified to focus on children of specific age ranges and abilities. Although preservice training programs should make every attempt to continue to expand in order to include preparatory experiences related to practice in educational settings, trying to address training needs from a preservice level only is likely to have a limited impact since therapists must ultimately be certified to practice across the life span. Considerable emphasis needs to be placed on inservice training for the specialized skills needed to practice in public schools.

The difficulty in recruiting and retaining physical and occupational therapists to work in educational settings is a major concern for the therapy fields, as well as for the public schools. The problem of recruiting therapists with experience working with individuals who have severe disabilities is compounded by the nationwide shortage of therapists that is projected to continue for some time (ASAHP, 1988; Davis, 1988; Simonton, 1988). A discussion of the larger of issue of a shortage of therapists in general is beyond the scope of this chapter. It is important to realize, however, that working with school aged children who have severe disabilities comprises a very small percentage of practice in the fields of physical and occupational therapy. Emphasized here will be ways in which school districts can recruit, support, and retain therapists.

Numerous factors have been identified that influence therapists' decisions to work in educational settings (Ciccione & Wolfner, 1988; Effgen, 1985; Effgen, Bjornson, Deubler & Kaplan, 1985; Lundy, 1988; Ramforth, 1985; Ramforth, 1988). One preservice influence is an emphasis on pediatrics and work in educational settings through academic coursework and clinical affiliations (practica). A recent report by Ciccione & Wolfner (1987) indicated that 51% of therapists seek immediate post graduation employment in one of their clinical education sites. Therefore, public schools might improve recruitment by establishing clinical education experiences (practica) for therapists in their school programs. Other influences on the decision to work in educational settings include a competitive salary and continuing education opportunities (Effgen, 1985; Effgen, Bjornson, Deubler & Kaplan, 1985; Kaplan, 1984; Ramforth, 1988). Isolation from other therapists was identified as a concern of therapists considering employment in educational settings (Effgen, 1985; Ramforth, 1988). Public school administrators should consider that continuing education opportunities serve to train therapists for work in educational settings (Effgen, 1985; Langdon & Langdon, 1983) as well as provide therapists with opportunities to network with other therapists. Assurances of continuing education opportunities are an important recruitment tool.

Once employed in the public schools, efforts must be made to train and support therapists on the job. Essentially there are three approaches to inservice training: (1) on-the-job training, (2) continuing education workshops and coursework, and (3) graduate study in programs with specialized areas of interest. On-the-job training accounts for a majority of training in specialty areas (Effgen, 1988; Ramforth, 1988; York & Ramforth, 1989). One strategy for supporting new therapists is to implement a mentoring program (Effgen, 1988). In small school districts, opportunities to observe and talk with therapists working in surrounding districts should be provided. Districts can hire therapists with experience working in educational settings to provide short term technical assistance to new therapists

also. Therapists must be supported in the change process as they learn new roles and responsibilities. An initial investment to support therapists can have the long term pay off of retention and effectiveness as a school based therapist.

A second approach to inservice training is continuing education opportunities which can take the form of short or extended courses, participation in local, regional, and national conferences, and inservice training sponsored by local school districts. A large percentage of therapists have identified continuing education experiences as the major way in which they developed expertise related to the pediatric and developmental disabilities specialty areas of practice.

Third, graduate programs in special education, physical therapy, and occupational therapy can address the training needs of therapists to work with individuals who have severe disabilities also. There are numerous programs throughout the country with advanced special education graduate training programs related to persons with severe disabilities. There are no physical or occupational therapy graduate programs specific to persons with severe disabilities but there are several programs with pediatrics as a specialization option. (Contact the American Physical Therapy Association and the American Occupational Therapy Association for current programs.) Further, the U.S. Office of Education funds approximately five projects per year to prepare related services personnel, including occupational and physical therapists, for work in special education. In addition to the related services grants, other special education projects have included occupational and physical therapists also. (Contact the U.S. Office of Education for specific information about current related services training programs).

Interdisciplinary efforts among national organizations can facilitate training. Just as effective service provision for persons with severe disabilities is dependent upon collaboration among team members who have varied areas of expertise, addressing the training needs of therapists to work most effectively with people who have disabilities requires collaboration among individuals in various professional organizations, training programs, and service provision systems to ensure an interdisciplinary consensus of issues and barriers and to solve the problems in designing and implementing training. The Association for Persons with Severe Handicaps (TASH), the American Physical Therapy Association (APTA), and the American Occupational Therapy Association (AOTA) are very much aware of therapist training needs for working with students who have severe disabilities. For the therapy associations, these needs are part of the greater issue of training for therapists to work in educational settings with students having a variety of disabilities, of which learners with severe disabilities comprise a small percentage. For the past three years, the TASH Related Services Subcommittee (Wark & Renforth, 1988) has focused on (1) developing a series of sessions at the annual conference directed at OT, PT, and speech issues in providing services to persons with severe handicaps, (2) developing a position statement on the role of related services personnel in working with individuals who have severe disabilities and their families (see Table 4), (3) developing a resource list on team models and integrated therapy (see Appendix A), and (4) conducting a survey of the related services members of TASH to determine training needs and strategies. This Subcommittee is comprised of physical therapists, occupational therapists, speech therapists, special educators and parents, many of whom have training in education and therapy fields and who are involved in national therapy associations, also. Participation by therapists in the related services series at the annual conference has grown and discussion during coalitional sessions has served as a forum to share practical

strategies, to raise and address issues, to connect with other therapists, and generally to provide support. School districts and inter-district efforts might be directed at developing task forces and critical issues discussion groups for physical and occupational therapists at the local level. The position statement has been published in topical newsletters of both the APTA and AOTA. The resource list and complete results of the survey are available from Tinsley.

Both the American Occupational Therapy Association (1987) and the American Physical Therapy Association (revision in preparation) have written and revised guidelines for practice in educational settings. While not specific to students with severe disabilities, educationally relevant therapy and collaborative teamwork are emphasized. Also, the American Occupational Therapy Association recently received funding for a three-year interdisciplinary training program focusing on preparation of occupational therapists to work with infants, toddlers, and their families. Program faculty will include occupational therapists and parents of children with disabilities. These collaborative efforts related to addressing the personnel preparation needs of physical and occupational therapists to work with individuals who have severe disabilities are very positive first steps. Just as the problems have been longstanding, addressing them will not happen on a large scale within a short period of time. Especially since addressing training needs specific to individuals with severe disabilities is only one piece of the larger picture of needs related to other client groups. The strategies employed will need to be multifaceted and longitudinal.

CONCLUSION

Physical and occupational therapists have a tremendous opportunity to affect the integrated life outcomes of persons with severe disabilities by working as collaborative team members in educational settings. As educational service provision systems continue to change so that children are included to a greater extent in regular school life and receive instruction in off campus, community environments, models of therapy service provision will necessarily change also. Instituting more integrated models of therapy will require participation and support by the therapists, educators, and parents on the teams, by district administrators, and by therapy and education training programs and organizations. Key to the series will be designing and implementing training and technical assistance models that provide 'how-to' information and that support the individuals in educational systems who are learning new roles and responsibilities.

Table 6
Position Statement of the Related Services Subcommittee of the TASH Critical Issues Committee

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The Association for Persons with Severe Handicaps (TASH) is an international organization whose primary purpose is to advocate and support nontraditional models of service delivery for persons with severe handicaps.

Many persons with severe handicaps have complex and challenging needs. The expertise of related services professionals such as physical therapists, occupational therapists, and speech and language pathologists is frequently required.

TASH believes that related services personnel have expertise and can contribute in the process of integrating persons with severe handicaps into typical home and community life. A high degree of collaboration and sharing of information and skills must occur among families, direct service providers, and related services personnel.

The provision of integrated services requires that related services personnel:

1. Establish priorities with parents/advocates and other team members.
2. Observe and assess persons with handicaps in natural settings.
3. Collaborate with family and team members to provide intervention strategies and adaptations that optimize participation in natural settings.
4. Teach specific and individualized procedures to enhance functional positioning, movement, and communication abilities in natural settings.
5. Evaluate the effectiveness of intervention procedures based on performance outcomes in natural settings.

ADOPTED BY TASH BOARD, NOVEMBER 1988

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Appendix A:

Recommended Readings on
Teamwork and Integrated Therapy
(see pages 5-12 of this monograph)

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Appendix B:

Sample Job Description for
Physical/Occupational Therapists Who Provide Services to
Students With Severe Disabilities

SAMPLE:

JOB DESCRIPTION FOR
PHYSICAL/OCCUPATIONAL THERAPIST
WORKING WITH STUDENTS WHO HAVE SEVERE DISABILITIES

The following job description delineates responsibilities for physical and occupational therapists who work with students who have moderate, severe, and multiple disabilities. This job description was predicated on the following tenets. Physical and occupational therapy services provided in educational settings must: (1) address the individual educational needs of each student; (2) be integrated throughout the regular education, domestic, recreation/leisure, community, vocational environments in which students receive instruction and are expected to function; and (3) be coordinated with the services provided by other members of the educational team. Collaboration and communication across disciplines and with parents is essential.

Meeting the comprehensive, varied, and complex educational needs of students with moderate, severe, and multiple disabilities presents a significant challenge for students, as well as team members. However, through collaborative, educational services for students, the educational team can move closer toward accomplishing the goal of maximal participation in regular school and community environments of students with disabilities. This job description is intended to present guidelines for the practice of physical/occupational therapist in educational settings such that achievement of this goal can be realized.

The Physical/Occupational Therapy Job Description is divided into four primary areas of responsibility: assessment; program planning; program implementation; and team process.

ASSESSMENT

1) The Physical/Occupational Therapist will participate in assessment of individual students to determine the need for and the type of therapy services to be delivered.

2) The Physical/Occupational Therapist will participate in initial assessments performed jointly by an Occupational and a Physical Therapist. Two types of assessment information will be obtained: developmental functioning and environmental functioning information. Both types of information can and should be obtained through observation and hands-on interaction in naturally occurring, functional situations.

a. Developmental functioning information in each of the following skill areas will be obtained.

Gross motor skills, including: methods of mobility, postural control, balance/equilibrium responses, transitions and transfers between positions, strength and endurance.

Fine motor skills, including: functional and cooperative hand use, reach/grasp/release, eye-hand coordination, visual motor skills, tool use.

Oral motor skills, including: drinking, sucking, swallowing, biting, chewing.

Neuromuscular status, including: joint range of motion, muscle tone, muscle strength, endurance, coordination, efficiency, motor planning, quantity and quality of movement, interfering reflexes, sensorimotor integration and processing.

Respiratory functioning, including: breathing patterns and efficiency, coughing.

b. Environmental functioning information addresses the ability of a student to interact, participate, and perform in typical daily or weekly functional activities under natural conditions. To obtain this information, the Physical/Occupational Therapists will observe students and perform hands-on assessment in a variety of school, home, and community environments. Examples of environements and activities in which assessment might take place include:

School Environments: classroom, bathroom, cafeteria, hallways and entryways, playgrounds, and bus loading/unloading areas;

Community Environments: cars, public buses, grocery stores, shopping malls, restaurants, and work sites.

Home Environments: walkways and entryways, yard, kitchen, family room, bathroom, and bedroom.

The information that will be obtained in the above environments will be related to:

Transitions: How does/should a student participate in mobility and transfer activities?

Positioning: How does/should a student be positioned to enable maximal participation in functional activities?

Participation: How does/should a student use his arms, hands, head or other body part to participate? How should instructors provide assistance to maximize participation?

Adaptations: What positioning equipment, environmental modifications, or adaptive devices are available or could be built/obtained to enhance participation?

3) The Physical/Occupational Therapist will determine then share with other team members safe and efficient methods for positioning, handling, facilitating movement, and transferring individual student. Use of proper body mechanics to increase movement efficiency and to minimize physical strain on persons working with students must also be emphasized.

4) The Physical/Occupational Therapist will collaborate with other team members during environmental assessments. Because each team member analyzes the abilities and needs of students from a different point of view. A compilation of these viewpoints and varied skills during assessment can result in a more appropriate, balanced analysis of student functioning. Therefore, therapists and teachers will jointly observe and assist students participate in natural environments/activities to provide a basis for discussion of assessment findings and prioritization of educational goals and objectives.

5) The Physical/Occupational Therapist will write assessment reports for both the developmental and environmental assessments. Developmental assessment information that is pertinent to educational programming will be objectively and concisely summarized for parents, physicians, and other team members regarding each student's current motor abilities as part of every 3-year re-evaluation.

Environmental assessment information will be summarized as part of a collaborative team report on environmental functioning. This information will be organized into domestic, recreation/leisure, community, and vocational areas of functioning. Specific activities assessed in each of these areas will be delineated and commented upon. The IEP goals and objectives will serve as the basis for documenting change on an annual basis.

6) The Physical/Occupational Therapist will engage in ongoing assessment of student abilities in natural environments and activities. This will include both observations of and hands-on interactions with students an ongoing systematic data collection and analysis.

PROGRAM PLANNING

1) The Physical/Occupational Therapist will participate in a discussion with other team members to prioritize educational goals and objectives to be targeted for instruction during the school year. This will require delineation of educational needs identified during assessment, followed by team discussion (including parents), then a joint decision regarding the most important skills to receive instructional emphasis.

2) The Physical/Occupational Therapist will write educationally relevant goals and objectives that are stated in behavioral and measurable terms and that specify performance in natural environments and activities.

3) The Physical/Occupational Therapist will write instructional programs and procedures to be carried out on a regular basis by teacher, instructional aides, therapy aides, and parents. These programs will specify:

Equipment and adaptive devices required;
The position of the student and a description of how to achieve the position;
The movements expected of the student for participation;
The position of the instructor;
The assistance provided by the instructor;
Other pertinent antecedents;
Consequences, both error correction and reinforcement procedures; and
Data collection procedures.

4) The Physical/Occupational Therapist will participate in scheduling student and class activities for the purpose of identifying opportunities throughout the week when therapeutic practices and movement expectations can be integrated into functional activities in school, home, and community environments.

PROGRAM IMPLEMENTATION

1) The Physical/Occupational Therapist will observe, monitor, and re-evaluate student performance during instructional activities in school, home, and community environments on a regular basis. The frequency, duration, and location of these interactions will be determined by the educational team based on individual student needs.

2) The Physical/Occupational Therapist will provide both direct and indirect services as appropriate for each student. To the greatest extent possible, therapy methods will be integrated as part of instruction that occurs on an ongoing basis in educational activities.

3) The Physical/Occupational Therapist will make or obtain necessary equipment and adaptive devices required for appropriate positioning and optimal participation in functional and educational activities.

NOTE: This sample job description has been adapted from the original version developed in 1994 by Jennifer York in collaboration with the DeKalb County Special Education Cooperative in Illinois.